

ABSTRACT

Heat exchangers of this invention include a shell having an inner chamber defined by an inside wall surface, and having at least one opening adjacent an end of the shell. A tube bundle comprising a plurality of assembled together tubes are disposed within the inner chamber. A header plate is attached to the tubes and is positioned adjacent an end of the tube bundle. The header plate includes an outside diameter that fits within the shell inside wall surface to provide a nested attachment junction therebetween. The header plate and shell are fixedly connected to one another by use of a braze joint formed by the placement of brazing material between the interfacing header plate and the shell surface sections. A tank is attached to the shell adjacent the shell end.